## REMARKS

The Office Action dated August 11, 2004 has been received and carefully noted. The following remarks are submitted as a full and complete response thereto. Claims 1-22 are pending and are respectfully submitted for consideration.

Claims 1-3, 5-11, 13, 14 and 16-22 were rejected under 35 U.S.C. §102(b) as being clearly anticipated by *Sonntag* (U.S. Patent No. 5,012,142). Claims 1-22 were rejected under 35 U.S.C. §103(a) as being unpatentable over *Sonntag* in view of *Manna et al.* (U.S. Patent No. 6,842,078). The Office Action acknowledges that *Sonntag* fails to teach n-well MOSFETs and *Manna et al.* is cited as curing this deficiencies. Applicants respectfully traverse the above rejections according to the remarks that follow.

Claim 1 recites an oscillator, including a first phase shift circuit including a first pole, a second phase shift circuit including a second pole, and having an input coupled to an output of the first phase shift circuit and a third phase shift circuit including a third pole, and having an input coupled to an output of the second phase shift circuit, wherein an output of the third phase shift circuit is cross-coupled to an input of the first phase shift circuit. At least one of the first, second and third poles includes a varactor to generate a phase shift according to the at least one of the first, second and third poles. Claims 2-6, 11 and 12 depend from claim 1.

Claim 7 recites a ring oscillator having three stages, the ring oscillator having a phase shift circuit to tune a frequency of an output signal and a pole within the phase shift

circuit, wherein the pole includes a varactor to provide a capacitance for the pole. Claims 8-10 depend from claim 7.

Claim 13 recites a circuit for providing a signal, the circuit having a voltage supply, an oscillator including at least two phase shift circuits, wherein a final phase shift circuit is a cross-coupled to a first phase shift circuit, a diode coupled to the voltage supply and the final phase shift circuit of the at least two phase shift circuits and a varactor within a pole of the final phase shift circuit, wherein the varactor tunes a frequency of a signal generated by the oscillator. Claims 14 and 15 depend from claim 13.

Claim 16 recites a method for generating an output signal in a ring oscillator including applying a voltage control signal to a pole within a phase shift circuit, generating on output signal having a frequency according to the pole and generating a phase shift in the phase shift circuit according to the pole. Claims 17-21 depend from claim 16.

Claim 22 recites a circuit for generating an output signal, the circuit including applying means for applying a voltage control signal to a pole within a phase shift circuit, first generating means for generating an output signal having a frequency according to the pole and second generating means for generating a phase shift in the phase shift circuit according to the pole.

*Sonntag* is directed to a fully differential variable delay element for providing precision delays for use in digital phase-locked loops or the like. The delay in each stage is controlled by changing bias currents and the coupling of a capacitance load thereto,

therby reducing the sensitivity of the delay element to electrical noise at low bias current levels (long delay times). Included is a circuit which substantially removes any skew in the differentially delayed signals from the delay element.

Claim 1, for example, recites that the input of the second phase shift circuit is coupled to the output of the first phase shift circuit, that the input of the third phase shift circuit is coupled to the output of the second phase shift circuit and the output of the third phase shift circuit is cross-coupled to the input of the first phase shift circuit. While the rejection indicates that *Sonntag* describes the feeding of an output back into the inputs to operate as a voltage controlled variable frequency ring oscillator, there is no teaching or description of the cross-coupling using three stages. Fig. 1 of *Sonntag* describes Fig. 1 as a differential tapped delay line having n taps. It does not, however, illustrate or describe a three stage oscillator with the last stage cross-coupled to the first stage. While the Office may find such a set up to be obvious in view of the teachings of *Sonntag*, to which Applicants do not agree, that is not the same as anticipation. As such, Applicants respectfully assert that the rejection of claims 1-3, 5-11, 13, 14 and 16-22 is improper and should be withdrawn.

*Manna et al.* is directed to a ring oscillator circuit device, where the device has an odd number of inverting stages. The inverter stages are coupled in a ring such that the output terminals of preceding inverting stages are coupled to the input terminals of subsequent inverting stages. The ring oscillator is used for analyzing load dependence of

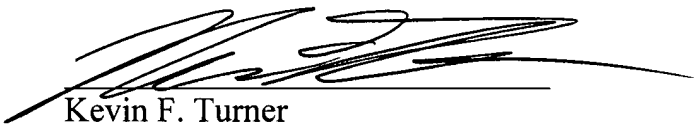
hot carrier injection. The ring oscillator is used as a voltage-controlled oscillator in a phase-locked loop circuit.

However, even if *Manna et al.* is accepted as teaching what it has been alleged, namely use of n-well MOSFETs, it does not cure the deficiencies of *Sonntag* discussed above. As such, Applicants respectfully assert that the rejection of claims 1-22 is likewise improper for at least the same reasons as indicated above. Thus, withdrawal of all rejections is respectfully requested and the application is requested to be allowed to pass to issue.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, the applicant's undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, the applicant respectfully petitions for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,



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